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ABSTRACT

The use of strategic long-range planning at Carnegie-Mellon University (CMU) is discussed. A structure for strategic planning analysis that integrates existing techniques is presented, and examples of planning activities at CMU are included. The key concept in strategic planning is competitive advantage: if a university has a competitive advantage, it will be more successful in attracting students, faculty, and financial support. Defining a context for planning is important in dealing with strategic issues. After developing a strategic planning framework and collecting appropriate information, a strategic planning analysis should be undertaken to determine the institution's competitive advantages and decide where a greater portion of resources should be placed. Three important issues in conducting strategic planning are: it must be done periodically; it should be done in a common format for each subunit; and it should deal with strategic issues. Strategic planning methods used for budget planning and for establishing the Planning Department are examined. (SW)

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STRATEGIC LONG RANGE PLANNING FOR UNIVERSITIES

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Mary Corcoran
University of Minnesota
(Editor, AIR Forum Publications)

STRATEGIC LONG RANGE PLANNING FOR UNIVERSITIES

Introduction

The multiple and often broad-based objectives of a college or university make strategic planning a particular challenge. This paper represents the results of thinking about and doing strategic long range planning at Carnegie-Mellon University (CMU). A structure for strategic planning analysis is presented which integrates existing techniques. Examples are provided of planning activities at CMU. The following sections of this paper will discuss the definition of strategic planning, strategic planning analysis, a university planning process, a strategic planning framework, examples of strategic planning, and conclusions about this field.

It should be stressed that this review of strategic planning grew out of many hours of discussions at CMU with academic and management administrators. Many of the ideas in this paper came from both formal and informal talks about planning with these people. The major forum for strategic discussions is the CMU Policy Committee. In 1979-80, the Policy Committee included the President, the Vice President for Management, the two Provosts, the Vice Provost for Enrollment Planning, the Vice Provost for Computing, Libraries, and Planning, the Director of Business and Finance, the Director of Development, and the Director of Institutional Planning. One of the main purposes of this paper is to describe concepts and practices which have worked well at CMU, a university which places a great deal of emphasis on planning and analysis.

Definition of Strategic Planning

Planning is the process of preparing for the future. Strategic planning involves those decisions which are of major importance to an organization. Strategic issues are visible, global and significant.[1] Examples of strategic issues for a university are tuition, faculty and staff salaries, size and quality of freshman class, departmental budgets and tenure quotas. Strategic decisions usually involve questions of generating and allocating resources.

The key concept in strategic planning is that of competitive advantage. If a university has a competitive advantage (or advantages) then it will be more successful in attracting students, faculty, and financial support. If perfect competition existed, then strategic planning would be unnecessary. The markets a university deals with would dictate the prices paid and charged and services offered. Competition would wipe out any competitive advantages. But perfect competition does not exist. The physical location alone of each college makes it unique. Also the type of services provided make it impossible to rigorously compare instruction and research services across institutions. Without such comparisons and with such differences in services offered, a "well-behaved" market cannot exist and therefore competition will be imperfect. Imperfect competition then permits the creation and maintenance of competitive advantages by institutions.

One means of creating a competitive advantage is through the cumulative experience of conducting an activity. The concept is called an experience curve. The idea is that there are definite

advantages gained from the knowledge of operating a program, although the size of such gains diminishes after a certain point. This concept is similar to the production learning curve described for industrial settings. Because of this advantage to being first in an important program, it makes strategic planning all the more important.

Strategic planning, as with any planning, cannot be done succesfully in a vacuum. Defining a context for planning is especially important for strategic issues. One framework for defining a context is the WOTS-UP method.[2] The acronym stands for weaknesses, opportunities, threats and strengths. The following examples show the types of issues that would be included in this strategic planning framework at Carnegie-Mellon.

Strengths:	Faculty productivity and student quality.
Weaknesses:	Age, condition and suitability of physical space; geographic distribution of entering students.
Opportunities:	Growth in sponsored research; strong demand for professional education.
Threats:	Increased inflation and decline in numbers of high school graduates.

Robert Shirley has presented a similar framework for strategic planning.[3] Many other frameworks also exist. The main point is to use some framework to insure that the kind of issues mentioned above will be included in planning.

After strategic issues have been identified and plans are being made, it is useful to check for constraints or interactions among strategic areas. For example, it may appear that cutting back on alumni solicitation and increasing requests to foundations would be a

good strategy for the development office. But, limiting attention to the alumni could diminish their efforts in promoting the institutuion to prospective students. Or conversely, a shift from using alumni to help admissions could decrease their contributions. The existence of these or other interactions reinforces the importance of setting up a global or systems view of an institution and its environment for strategic planning. Once a strategic framework has been developed the rest of the planning process can begin.

Strategic Planning Analysis

A strategic planning analysis[4] is the next step after the strategic planning framework has been developed and the appropriate information collected. A strategic planning analysis should answer the questions: "Where are the institution's competitive advantages and therefore where should a greater portion of resources be placed?" The concept is to strengthen the university by emphasizing programs which have (or are expected to have) comparative advantages. The need for strategic planning is well stated by Fred Harcleroad, "No college or university, private or public, now has or can hope to have the resources needed to do everything well. An insitution will have to decide whether to do a few things well or many things poorly."[5]

The Boston Consulting Group (BCG) has developed a method of strategic analysis called the "product market matrix".[6] In its simplest form the matrix has two dimensions: market share and expected market growth. This simple, but powerful analysis works well for the private sector where profits are usually related to market

share. To maximize profits a firm therefore concentrates on products with high market share in growing markets and cuts back on products with low market share in declining markets.

Certainly a more complex analysis is needed for universities. As a public sector organization there are multiple goals which can't be captured with a single "bottom line". Peter Doyle and James Lynch made the first extension of the BCG matrix for a university. They used the dimensions of market share and market size.[7] This author feels that this adaptation is inappropriate since market growth is a better determinant of strategic importance than market size is. A college would be better off with a superior program in a growing, smaller market like technical writing than in a shrinking, large market like teacher education.

James Hollowood[8] has made another adaptation of the BCG matrix for universities. Hollowood's matrix has the dimensions of market share and the maturity of a field. Hollowood argues that market growth is a function of the maturity of a field. The notion of maturity of a field is an important concept but it is not a substantial change from the basic market share and market growth matrix.

Lawless, Levi, and Wright[9] provided this author with the idea of the missing dimensions from a strategic analysis for universities. They argued that program quality and the centrality of each program to the university's mission were important dimensions. This author feels that a synthesis of BCG's market share and market growth approach and Lawless et al's quality and centrality dimensions is an appropriate

basis for university strategic planning analysis.

The importance of market share and market growth have already been discussed with their obvious economic impact. Program quality and centrality are important because of the nature of universities. Quality is important for two reasons. First, in many student choice and research funding decisions, quality is a primary factor. Second, it is important for a university to have a relatively uniform level of quality. A low quality program at a high quality institution could taint the university's overall reputation. Or a high quality program at a moderate quality college would probably not receive the recognition it merits. Centrality is important because of the interdependence of academic fields in terms of teaching and research. Carnegie-Mellon, for example, would be handicapped without a strong mathematics department.

Given the four-dimensional analysis posed by the author, an institution could put relatively more resources in high market share, high market growth, high quality and central academic programs. The Computer Science Department at Carnegie-Mellon is an example of such a program. In fact, the success of this department was the result of a strategic decision made years ago. Conversely, a university would put relatively fewer resources in lower market share, lower (or negative) market growth, lower quality and less central academic programs. At CMU a strategic decision was implemented in Fall, 1979 which changed the Modern Languages Department to a program within the History Department. Figure 1 shows an example matrix for Carnegie-Mellon with two of the four strategic analysis dimensions.

Insert Figure 1 about here

A concept to keep in mind is that of what will the competition do. It is worthwhile to perform a strategic analysis for major competitors. The situation can often be analyzed using a game theoretic model. An example of competitive analysis comes from faculty affirmative action. Individual institutions may be well served by paying a premium salary to recruit a minority faculty member. If many institutions, however, are trying to do this, it will only bid up the salaries and still leave many colleges in a position of not meeting affirmative action goals. This analysis can then lead to alternate strategies such as working to increase the number of minority doctoral candidates.

It should be noted that although the creation of a strategic planning analysis is relatively straightforward, its application to decision-making is not. First, as with any analysis, strategies are suggested to decision-makers rather than determined by the analysis. The decision-makers will always need to use their judgment in taking action, especially since they are aware of complexities which the model can't take into account. Second, the amount of change in resource allocation will always be constrained by a university's situation. Tenured faculty cannot be dismissed without great disruption for an institution or facilities may not be easily converted from one purpose to another. Third, many strategic decisions at Carnegie-Mellon have not been at the level of emphasizing

field A versus field B but instead at questions of which sub-specialties within fields should be emphasized. And finally, all major decisions will be implemented through regular organization processes. For example, at Carnegie-Mellon the decision to de-emphasize modern languages was only made after an evaluation of the field and CMU's department by a visiting committee. And then the final decision to merge modern languages with history was made only after extensive discussions with the faculty. The next section of this paper will discuss an example of a university planning process which focuses on strategic issues.

A University Strategic Planning Process

There are three important issues in conducting strategic planning:

- it must be done periodically;
- it should be done in a common format for each subunit; and
- it should deal with strategic issues.

Table 1 shows the basic college planning outline being used at Carnegie-Mellon. The CMU planning process will occur during the 1979-80 academic year. This planning will be the first major planning effort since 1976-77. The outline is designed to stress strategic planning concerns. The points addressed in the outline are expected to produce plans which can be compared and assimilated at the university level. The extent of the common format is that each college plan is expected to cover each of the items in the outline explicitly. The specific arrangement of sections of the plan and the inclusion of additional information is then up to each dean as they

write their plan.

Insert Table 1 about here

The academic long range plans were one of several topics that have been discussed by the University's Policy Committee. Some of the other issues considered in 1979-80 were minority faculty recruitment, enrollments, development, and sponsored research. The Committee's role is that of a policy discussion and review group for the President.

Another procedural issue is important in planning. At CMU the planning is top-down. The President sets the goals of the University and provides a framework for each college to conduct their planning. Bottom-up planning is an equally valid method. In either case there will be discussion and plan modifications once any planning takes place and people at a different level of the organization respond. And while CMU focuses on departments in strategic planning, institutional mission areas are another basis for structuring planning efforts.[10] The next sections of this paper will discuss some specific strategic planning examples at Carnegie-Mellon.

Budget Planning

A major issue in budgeting is how to integrate information about academic departments and how to translate that into budget decisions. Although definitive procedures have not been developed, Carnegie-Mellon has had some useful experiences concerning these

issues.

In planning the CMU 1980-81 budget in September, 1979, departmental indicators were used to present summary information. Table 2 lists these indicators. In each case the indicator was not presented in basic units of data such as dollars or units taught, but were converted to quintiles. The budget indicators were included to represent past strategic decisions. The research and units taught trend indicators measure market change. Research overhead recovered addresses research productivity and budget need. Units taught outside own department is a measure of teaching centrality. Finally, the income analysis supplement is a composite measure which is a proxy summary for teaching and research market share.

Insert Table 2 about here

The academic department income analysis is computed in the following way. Gross revenue is assigned on the basis of units taught and research overhead recovered. Charges are calculated for administration, library, computer center services, and assigned space. Net revenue is gross revenue less charges. The supplement is the department's educational and general operating budget less their net revenue. The supplement basically measures the extent to which endowment income is used to support each department. Of course, care must be used in comparing departments. The physical sciences are usually much more expensive to support than the humanities, for example.

A delphi survey technique was then used by top university administrators to rate the budget priority of each department for 1980-81. After the second round of surveys, convergence was reached for over half the departments. More rounds were not completed because this process was only a guide to budget decisons, not a precise determinant, nor was it intended to be. In any system, top managers need to apply their judgments to the results of a planning process. In addition, at CMU budgets are given to deans who then decide departmental budgets. CMU's process is also top-down, starting with budgets based on expected revenues rather than with departmental lists of needs.

The result of this effort was a preliminary budget which was different at the college level from an across-the-board increase. On one hand, the difference from an even increase was only about half a percent of the funds allocated. On the other hand, 1980-81 is a year in which CMU plans to emphasize salary increases rather than departmental strategic importance. A rather different planning method was used in planning for the Planning Department.

Planning for the Planning Department

The experience during the summer of 1979 of planning for a Planning Department at Carnegie-Mellon was valuable for two reasons. First, it was a prototypical procedure for any strategic planning. The two major functions of planning were involved: the identification of a set of potential projects or activities and the selection of a subset of the initial group of projects which would be done. Second,

a method was used to deal with the issue of a lack of an easily identified market share for the Planning Department's efforts.

The planning process began with three meetings at which all current projects and proposed projects were discussed. The discussions concentrated on explaining some of the projects, reviewing past effectiveness, and considering the organizational environment in which the department operates. Next, dimensions of project value were created. Valuation was an important issue since Planning does not charge for its services nor is there a reasonable way of conceptualizing the market share Planning has of all planning projects at Carnegie-Mellon. The method used for valuation was to have each person in Planning rate each project on a 1 to 5 scale with respect to value to the University, value to the project client(s), and professional value to the people in Planning. Weights of .6, .3, and .1 were assigned respectively to these values. Although arbitrary, these weights do provide a basis for valuing planning projects.

Given "values" of projects and estimating time requirements it was possible to produce a list of projects for Planning to complete during 1979-80. Manpower constraints then provide a cut-off point for feasible, high priority projects. This method helped to reach decisions to go ahead with a computer-based planning information system and to delay student attrition studies. The resulting list of projects also provides a basis for discussions with top administrators about priorities. While they shouldn't be expected to review all projects, the Provosts, Vice President, and President can look at five or ten projects around the cut-off point. (This effort also

documented a fact of life about the fragmentation of an Institutional Researcher's or Planner's work. At CMU in 1979-80, 2.25 full-time equivalent people are going to be doing 24 individual projects which will each take from 2 to 60 people-days to complete).

Conclusion

This author believes that strategic planning is extremely important. An individual or an organization will always be faced with more work than resources permit. It is therefore crucial to make strategic decisions about what should be done and what should not be done. The strategic planning framework, analysis, and processes outlined in this paper were integrated from existing techniques. The approaches presented and examples of planning at CMU were provided to be descriptive, rather than normative. More research should be done on the framework and the processes, especially concerning the measures that are used. It is also important to understand how a framework or process should vary given the goals and structure of an institution.

Footnotes

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8. Hollowood, James R. "College and University Strategic Planning." Arthur D. Litle, Inc., Cambridge, Massachusetts: August, 1979.

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10. Parekh, Satish. Chart 1 etc.

Figure 1

Product-Market Matrix
CMU Example Departments

Market	Academic Ranking (Quality)	
	HIGH RANKING	NOT RANKED
GROWING AREA	CHEMICAL ENGINEERING· COMPUTER SCIENCE· MANAGEMENT·	SOCIAL SCIENCES BIOLOGY
STABLE OR DECLINING	PHYSICS DRAMA	MODERN LANGUAGES

Table 1

COLLEGE PLANNING OUTLINE

1) Strategic Environment
   a) College goals statement
   b) External environment - College specific supplement to the university environment statement including an analysis of the competition.
   c) Strengths and weaknesses of each department and the college as a whole. What is the CMU comparative advantage?
   d) Internal relationships with other colleges or departments at CMU.

2) Opportunities Analysis
   a) Specific areas with opportunities for the college. Changes or forces in the environment to which the college can or should respond strongly.
   b) Pros and cons of each. How will they strengthen the colleges? Increased quality, visibility, financial support, etc. What risks do they involve? What is the competition?

3) Strategic Plan
   a) The college's recommended plan for utilizing the available alternatives should specify actions that will be taken as well as major alternatives that will not be adopted.
   b) Implementation
      Time schedule
      Tactics - e.g. recruitment strategy, source of funding
      Costs - capital - equipment, renovations
              operating
              support - e.g. library, computer
      Space
      Faculty and staff (esp. level of tenured faculty)
      Revenues
      Cost/Benefit analysis

4) Evaluation Plan
   a) Assessing success of the strategic plan
      Goal attainment
      Resource utilization
   b) Means of tracking competitors

Table 2

DEPARTMENTAL INDICATORS USED IN
BUDGET PLANNING

BUDGET

- Yearly Budget Increase % (5 year average, annualized)
- Last Year's Budget Increase %

RESEARCH

- Yearly Research Increase % (5 year average, annualized)
- Research Overhead Recovered per Faculty

TEACHING

- Yearly Units Taught Increase % (4 year average, annualized)
- Units Taught Last Year to Students Outside of Own College

COMPOSITE

- Academic Department Income Analysis Supplement